PROPOSED CLAIM AMENDMENTS
Claim 8-12, 20-24, and 32-36 were allowed by the Examiner:

Allowable Subject Matter

12. Claims 8-12, 20-24, and 32-36 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 5-7, 17-19, and 29-31 were reversed by the Board:

We have sustained the rejection of claims 1-4, 13-16, and 25-28 under 35 U.S.C. § 102(e), but we have not sustained the rejection of claims 5-7, 17-19, and 29-31 under 35 U.S.C. § 102(e).

To be entered only if the action is not withdrawn and the Board completely denies applicants' Request for Rehearing:

1-4. canceled.

5. ~~The~~ <u>An</u> apparatus ~~of claim 2~~, <u>comprising:</u>

<u>a device having a thermal characteristic which is dependent on a number of times the device is accessed over a period of time; and</u>

<u>a controller connected to the device and adapted to control access to the device,</u>

<u>wherein the controller is adapted to calculate a temperature estimate of the device and to control access to the device in accordance with the calculated temperature estimate,</u>

<u>wherein the controller is adapted to receive an access request, calculate the temperature estimate in accordance with the access request, determine if the temperature estimate exceeds a temperature threshold, and impose an access request budget if the temperature estimate exceeds the temperature threshold,</u>

wherein the controller is adapted to calculate a new access request budget each time the access request budget is imposed.

6. ~~The~~ An apparatus ~~of claim 2~~, comprising:

a device having a thermal characteristic which is dependent on a number of times the device is accessed over a period of time; and

a controller connected to the device and adapted to control access to the device,

wherein the controller is adapted to calculate a temperature estimate of the device and to control access to the device in accordance with the calculated temperature estimate,

wherein the controller is adapted to receive an access request, calculate the temperature estimate in accordance with the access request, determine if the temperature estimate exceeds a temperature threshold, and impose an access request budget if the temperature estimate exceeds the temperature threshold,

wherein the controller is adapted to calculate a new access request budget periodically.

7. The apparatus of claim 6, wherein the controller is adapted to calculate the new access request budget when a parameter involved in the calculation is updated.

8. The apparatus of claim 7, wherein the updated parameter corresponds to an ambient temperature.

9. ~~The~~ An apparatus ~~of claim 1~~, comprising:

a device having a thermal characteristic which is dependent on a number of times the device is accessed over a period of time; and

a controller connected to the device and adapted to control access to the device,

wherein the controller is adapted to calculate a temperature estimate of the device and to control access to the device in accordance with the calculated temperature estimate,

PAGE 4/11 * RCVD AT 11/6/2006 5:59:46 PM [Eastern Standard Time] * SVR:USPTO-EFXRF-3/16 * DNIS:2738300 * CSID:7036330933 * DURATION (mm-ss):04-04

wherein the controller is adapted to calculate the temperature estimate in accordance with an estimated initial temperature of the device, an estimated equilibrium temperature of the device, and an estimated temperature decay rate for the device.

10. The apparatus of claim 9, wherein the controller is adapted to calculate the temperature estimate in accordance with the following equation:

$$T_n = T_{n-1} - \left[T_{n-1} - \left(T_a + P_{max} \cdot \theta_{ja} \cdot \frac{1/f_{request}}{\Delta_{update}} \cdot R_{count} \right) \right] \cdot \Delta_{update} \cdot \alpha \quad ;$$

where: T_n corresponds to the temperature estimate;

T_{n-1} corresponds to a previous temperature estimate;

T_a corresponds to an ambient temperature;

P_{max} corresponds to a maximum device power;

θ_{ja} corresponds to a junction-to-ambient thermal resistance

$f_{request}$ corresponds to an access request frequency (e.g. a clock rate);

Δ_{update} corresponds to an estimator update period;

R_{count} corresponds to a number of access requests granted; and

α corresponds to a decay rate.

11. The apparatus of claim 9, wherein the controller is adapted to calculate the temperature estimate in accordance with the following equation:

$$T_n = T_{n-1} - \left[T_{n-1} - \left(T_a + c_1 \cdot R_{count} \right) \right] \cdot c_2$$

where: T_n corresponds to the temperature estimate;

T_{n-1} corresponds to a previous temperature estimate;

T_a corresponds to an ambient temperature;

R_{count} corresponds to a number of access requests granted;

$c1$ is a first constant; and

$c2$ is a second constant.

PAGE 5/11 * RCVD AT 11/6/2006 5:59:46 PM [Eastern Standard Time] * SVR:USPTO-EFXRF-3/16 * DNIS:2738300 * CSID:7036330933 * DURATION (mm-ss):04-04

12. The apparatus of claim 11, wherein $c1$ corresponds to $(P_{max} * \theta_{ja} * 1/f_{request} / \Delta_{update})$ and $c2$ corresponds to $(\Delta_{update} * \alpha)$;

where: P_{max} corresponds to a maximum device power;

θ_{ja} corresponds to a junction-to-ambient thermal resistance

$f_{request}$ corresponds to an access request frequency (e.g. a clock rate);

Δ_{update} corresponds to an estimator update period;

α corresponds to a decay rate.

13-16. canceled.

17. ~~The~~ A method ~~of claim 14~~, ~~further~~ comprising:

providing a device having a thermal characteristic which is dependent on a number of times the device is accessed over a period of time;

calculating a temperature estimate of the device;

controlling access to the device in accordance with the calculated temperature estimate,

receiving an access request;

calculating the temperature estimate in accordance with the access request;

determining if the temperature estimate exceeds a temperature threshold;

imposing an access request budget if the temperature estimate exceeds the temperature threshold; and

calculating a new access request budget each time the access request budget is imposed.

18. ~~The~~ A method ~~of claim 14~~, ~~further~~ comprising:

providing a device having a thermal characteristic which is dependent on a number of times the device is accessed over a period of time;

calculating a temperature estimate of the device;

PAGE 6/11 * RCVD AT 11/6/2006 5:59:46 PM [Eastern Standard Time] * SVR:USPTO-EFXRF-3/16 * DNIS:2738300 * CSID:7036330933 * DURATION (mm-ss):04-04

controlling access to the device in accordance with the calculated temperature estimate,

receiving an access request;

calculating the temperature estimate in accordance with the access request;

determining if the temperature estimate exceeds a temperature threshold;

imposing an access request budget if the temperature estimate exceeds the temperature threshold; and

calculating a new access request budget periodically.

19. The method of claim 18, the new access request budget is calculated when a parameter involved in the calculation is updated.

20. The method of claim 19, wherein the updated parameter corresponds to an ambient temperature.

21. ~~The~~ A method ~~of claim 13~~, comprising:

providing a device having a thermal characteristic which is dependent on a number of times the device is accessed over a period of time;

calculating a temperature estimate of the device; and

controlling access to the device in accordance with the calculated temperature estimate,

wherein the calculating comprises calculating the temperature estimate in accordance with an estimated initial temperature of the device, an estimated equilibrium temperature of the device, and an estimated temperature decay rate for the device.

22. The method of claim 21, wherein the temperature estimate is calculated in accordance with the following equation:

$$T_n = T_{n-1} - \left[T_{n-1} - \left(T_a + P_{max} \cdot \theta_{ja} \cdot \frac{1/f_{request}}{\Delta_{update}} \cdot R_{count} \right) \right] \cdot \Delta_{update} \cdot \alpha \;;$$

where: T_n corresponds to the temperature estimate;

T_{n-1} corresponds to a previous temperature estimate;

T_a corresponds to an ambient temperature;

P_{max} corresponds to a maximum device power;

θ_{ja} corresponds to a junction-to-ambient thermal resistance

$f_{request}$ corresponds to an access request frequency (e.g. a clock rate);

Δ_{update} corresponds to an estimator update period;

R_{count} corresponds to a number of access requests granted; and

α corresponds to a decay rate.

23. The method of claim 21, wherein the temperature estimate is calculated in accordance with the following equation:

$$T_n = T_{n-1} - \left[T_{n-1} - \left(T_a + c_1 \cdot R_{count}\right)\right] \cdot c_2$$

where: T_n corresponds to the temperature estimate;

T_{n-1} corresponds to a previous temperature estimate;

T_a corresponds to an ambient temperature;

R_{count} corresponds to a number of access requests granted;

$c1$ is a first constant; and

$c2$ is a second constant.

24. The method of claim 23, wherein $c1$ corresponds to $(P_{max} * \theta_{ja} * 1/f_{request} / \Delta_{update})$ and $c2$ corresponds to $(\Delta_{update} * \alpha)$;

where: P_{max} corresponds to a maximum device power;

θ_{ja} corresponds to a junction-to-ambient thermal resistance

$f_{request}$ corresponds to an access request frequency (e.g. a clock rate);

Δ_{update} corresponds to an estimator update period;

α corresponds to a decay rate.

PAGE 8/11 * RCVD AT 11/6/2006 5:59:46 PM [Eastern Standard Time] * SVR:USPTO-EFXRF-3/16 * DNIS:2738300 * CSID:7036330933 * DURATION (mm-ss):04-04

25-28. canceled.

29. ~~The~~ A system ~~of claim 26~~, comprising:

a processor;

a device; and

a controller connected between the processor and the device,

wherein the controller is adapted to calculate a temperature estimate of the device and to control access to the device in accordance with the calculated temperature estimate,

wherein the controller is adapted to receive an access request, calculate the temperature estimate in accordance with the access request, determine if the temperature estimate exceeds a temperature threshold, and impose an access request budget if the temperature estimate exceeds the temperature threshold,

wherein the controller is adapted to calculate a new access request budget each time the access request budget is imposed.

30. ~~The~~ A system ~~of claim 26~~, comprising:

a processor;

a device; and

a controller connected between the processor and the device,

wherein the controller is adapted to calculate a temperature estimate of the device and to control access to the device in accordance with the calculated temperature estimate,

wherein the controller is adapted to receive an access request, calculate the temperature estimate in accordance with the access request, determine if the temperature estimate exceeds a temperature threshold, and impose an access request budget if the temperature estimate exceeds the temperature threshold,

wherein the controller is adapted to calculate a new access request budget periodically.

PAGE 9/11 * RCVD AT 11/6/2006 5:59:46 PM [Eastern Standard Time] * SVR:USPTO-EFXRF-3/16 * DNIS:2738300 * CSID:7036330933 * DURATION (mm-ss):04-04

31. The system of claim 30, wherein the controller is adapted to calculate the new access request budget when a parameter involved in the calculation is updated.

32. The system of claim 31, wherein the updated parameter corresponds to an ambient temperature.

33. ~~The~~ A system ~~of claim 25~~, comprising:

a processor;

a device; and

a controller connected between the processor and the device,

wherein the controller is adapted to calculate a temperature estimate of the device and to control access to the device in accordance with the calculated temperature estimate,

wherein the controller is adapted to calculate the temperature estimate in accordance with an estimated initial temperature of the device, an estimated equilibrium temperature of the device, and an estimated temperature decay rate for the device.

34. The system of claim 33, wherein the controller is adapted to calculate the temperature estimate in accordance with the following equation:

$$T_n = T_{n-1} - \left[T_{n-1} - \left(T_a + P_{max} \cdot \theta_{ja} \cdot \frac{1/f_{request}}{\Delta_{update}} \cdot R_{count} \right) \right] \cdot \Delta_{update} \cdot \alpha \quad ;$$

where: T_n corresponds to the temperature estimate;

T_{n-1} corresponds to a previous temperature estimate;

T_a corresponds to an ambient temperature;

P_{max} corresponds to a maximum device power;

θ_{ja} corresponds to a junction-to-ambient thermal resistance

$f_{request}$ corresponds to an access request frequency (e.g. a clock rate);

Δ_{update} corresponds to an estimator update period;

PAGE 10/11 * RCVD AT 11/6/2006 5:59:46 PM [Eastern Standard Time] * SVR:USPTO-EFXRF-3/16 * DNIS:2738300 * CSID:7036330933 * DURATION (mm-ss):04-04

Rcount corresponds to a number of access requests granted; and

α corresponds to a decay rate.

35. The system of claim 33, wherein the controller is adapted to calculate the temperature estimate in accordance with the following equation:

$$T_n = T_{n-1} - \left[T_{n-1} - \left(T_a + c_1 \cdot R_{count}\right)\right] \cdot c_2$$

where: T_n corresponds to the temperature estimate;

T_{n-1} corresponds to a previous temperature estimate;

T_a corresponds to an ambient temperature;

R_{count} corresponds to a number of access requests granted;

$c1$ is a first constant; and

$c2$ is a second constant.

36. The system of claim 35, wherein $c1$ corresponds to $(P_{max} * \theta_{ja} * 1/f_{request} / \Delta_{update})$ and $c2$ corresponds to $(\Delta_{update} * \alpha)$;

where: P_{max} corresponds to a maximum device power;

θ_{ja} corresponds to a junction-to-ambient thermal resistance

$f_{request}$ corresponds to an access request frequency (e.g. a clock rate);

Δ_{update} corresponds to an estimator update period;

α corresponds to a decay rate.

PAGE 11/11 * RCVD AT 11/6/2006 5:59:46 PM [Eastern Standard Time] * SVR:USPTO-EFXRF-3/16 * DNIS:2738300 * CSID:7036330933 * DURATION (mm-ss):04-04